

> LEARN MORE

EXTEND HIGH PERFORMANCE AND LOW POWER CONSUMPTION INTO EDGE COMPUTING DEPLOY AMD EPYCTM 8004 CPUS INTO TELCO, CLOUD, AND EDGE LOCATIONS

The x86-architecture server processors designed to deliver high performance in challenging physical environments

AMD powers the intelligent edge with purpose built, energy-efficient processors built for cloud service providers, network security, manufacturing, retail, telco, and other edge deployments. AMD EPYC[™] 8004 Series processors deliver balanced performance with thermally optimized cores, offering design flexibility to help deploy applications in locations requiring specialized form factors or presenting environmental challenges. Understanding the need to get more responsiveness at the edge for less power, we designed these processors to deliver outstanding performance per system watt and per system dollar.

HIGH PERFORMANCE, LESS ENERGY

 GAIN 1.9X THE PERFORMANCE PER SYSTEM WATT running SPECpower_ssj®2008 on 1P systems with a 64-core AMD EPYC 8534P compared to a 60-core Intel® Xeon® 8490H+ processor.



HIGH-QUALITY CONTENT DELIVERY

• SUPPORT HIGHER VIDEO TRANSCODING QUALITY at lower bit rates at the edge with single-socket servers: a 64-core EPYC 8534P delivers ~2.4x the aggregate frames/hour/ system W compared to a 52-core Xeon 8471N CPU.^{SP6-014}



GET MORE FROM 8KW RACKS

• ACHIEVE 85% MORE CORE DENSITY PER RACK and 46% more SPECrate[®]2017_int_base performance per rack, comparing racks of 1P servers using up to 8 kW with 64-core EPYC 8534PN compared to 52-core Xeon 8471N CPUs.^{SP6-003}



ACCELERATE YOUR IOT GATEWAY

• UP TO 91% BETTER APACHE IOTDB PERFORMANCE PER SYSTEM WATT PER SYSTEM DOLLAR using 1P servers with 8-core EPYC 8024P compared to 8-core Xeon 3408U processors. <u>SP6-005</u>



SPEED EDGE APP EFFICIENCY

• 2.1X THE SERVER-SIDE JAVA® OPERATIONS PER 8 KW rack at 100% target load when you use 1P servers with 64-core EPYC 8534P compared to 52-core Xeon 8471N CPUs. SP6-007



REDUCE YOUR POWER BUDGET

 REDUCE YOUR INTEGER OPERATIONAL POWER COST BY UP TO AN ESTIMATED 34% OVER FIVE YEARS using 10 servers with 64-core EPVC 8534P processors compared to 52-core Xeon 8471N CPUS. SPGTCO-001



PURPOSE BUILT FOR THE INTELLIGENT EDGE

The network edge is where pervasive intelligence is born. From the vast capacity of 5G networks to power smartphone applications to the demands of automated, intelligent automobiles, vast amounts of data are created at the edge. Placing and securing data, compute, and storage closer the points of data creation are the keys to unlock new experiences and services.

But the edge is not the core data center, and it imposes different demands on IT infrastructure deployment. These locations have challenging power and space requirements—for example they often must exist in telco racks that are configured for only 8–12 kW each. Extreme physical environments challenge servers to operate in the wide temperature ranges found in cell sites, telephone company central offices, retail stores, and factory floors.

Power and space challenges



- Voice and video packet processing in city telco buildings
- Backbone network cloud in 8-12 kW racks
- Third-party mini data centers



- Factory floor control systems
- Metro or regional operations for businesses, utilities, and government
- Base station, telco metro sites, and campus/private 5G networks

Shared technology and workspaces



- Retail and remote office locations
- Virtual desktop infrastructure
- Electronic medical records
- Office equipment

To meet these needs, we have created an ultra-dense and highly power-efficient processor family. Oriented around delivering high performance per watt and per system dollar, we use the 'Zen 4' register-transfer logic from the EPYC 9004 Series and reduce its size from 3.84 mm² to 2.48mm² to create a dense 'Zen 4c' core. In the EPYC 9004 Series, we use these dies to build CPUs with 112–128 cores for data center environments. In the EPYC 8004 Series, we combine up to four 'Zen 4c' dies to deliver small, SP6 form-factor CPUs with 8–64 cores that only use 70-225W of power. These processors are designed for servers designed to work in tight spaces and manage thermal extremes, ready to power the edge.

Our system-on-chip design simplifies system design so motherboards can be compact with fewer power-consuming controller chips. Up to 32 lanes of PCIe[®] bandwidth can be allocated to use on-CPU SATA controllers. The built-in system controller hub provides Gigabit Ethernet, USB, UART, and I₂C and I₃C bus connectivity, eliminating another source of power consumption.

With our "all in" feature-set support, every processor in the series offers 6 memory channels reaching up to 1.152 TB of DDR5-4800 memory and 96 lanes of PCIe[®] Gen 5 bandwidth that can be allocated to provide up to 48 lanes of Compute Express Link (CXL[™]) 1.1 memory connectivity. Like all 4th Gen EPYC processors, it supports

the AVX-512 instruction set, and AMD Infinity Guard^{GD-183} security features with the full set of memory encryption capabilities including AMD Secure Memory Encryption (SME) and AMD Secure Encrypted Virtualization (SEV). The bottom line: Select between standard and NEBS®-friendly CPUs, then just choose the core count, frequency, and cache size you need–memory capacity, security features, and I/O bandwidth are included at no additional cost.

Relative Characteristics of EPYC 9004 and 8004 Series Processors (for comparative purposes only)



FOOTNOTES

3 AMD Infinity Guard features vary by EPYC^{**} Processor generations. Infinity Guard security features must be enabled by server OEMs and/or Cloud Service Providers to operate. Check with your OEM or provider to confirm support of these features. Learn more about Infinity Guard at <u>https://www.amd.com/en/technologies/infinity-guard</u>.

© 2023 Advanced Micro Devices, Inc. All rights reserved. All rights reserved. AMD, the AMD Arrow logo, EPYC, and combinations thereof are trademarks of Advanced Micro Devices, Inc. in the United States and/or other jurisdictions. Apache and the Apache feather logo are trademarks of The Apache Software Foundation. CXL is a trademark of Compute Express Link Consortium, Inc. Intel and Xeon are trademarks of Intel Corporation or its subsidiaries. Java is a registered trademark of Oracle and/or its affiliates. NEBS is a trademark of Telefonaktiebolaget LM Ericsson. PCIe is a registered trademark of PCI-SIG Corporation. SPEC, SPECpower_ssj, and SPECrate are trademarks of the Standard Performance Evaluation Corporation. See <u>www.spec.org</u> for more information. Other names are for informational purposes only and may be trademarks of their respective owners. PID 232360305-A 11/23